

SECTION 32 31 13 - CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.1 SCOPE OF WORK

Work under this section includes the technical requirements for furnishing and installing the required fencing and gate in connection with the construction of the leachate holding pond. All materials used shall meet the requirements of this specification, and all work shall be performed in accordance with the procedures provided herein and the Design Plans and Drawings.

Fencing to be used for this project shall include the following:

- Fence framework, fabric, and accessories
- Excavation for post bases
- Concrete foundation for posts
- Manual gate and related hardware

1.2 REFERENCES

ASTM A123/A123M: Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

ASTM A153/A153M: Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

ASTM A392: Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.

ASTM A491: Standard Specification for Aluminum-Coated Steel Chain-Link Fence Fabric.

ASTM A792/A792M: Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

ASTM A1011/A1011M: Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.

ASTM B429: Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube.

ASTM C94: Standard Specification for Ready-Mixed Concrete.

ASTM F567: Standard Practice for Installation of Chain-Link Fence.

ASTM F668: Standard Specification for Poly (Vinyl Chloride) (PVC)-Coated Steel Chain Link Fence Fabric.

ASTM F900: Standard Specification for Industrial and Commercial Swing Gates.

ASTM F934: Standard Specification for Standard Colors for Polymer-Coated Chain Link Fence Materials.

ASTM F1043: Standard Specification for Strength and Protective Coatings on Metal Industrial Chain Link Fence Framework.

ASTM F1083: Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures.

ASTM F1184: Standard Specification for Industrial and Commercial Horizontal Slide Gates.

Chain Link Fence Manufacturers Institute (CLFMI) - Product Manual.

1.3 SUBMITTALS

- Shop drawings: Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, gates, and schedule of components.
- Product data: Submit data on fabric, posts, accessories, fittings, and hardware.
- Operation and maintenance data.

1.4 QUALITY ASSURANCE

- Supply material in accordance with the Chain Link Manufacturer's Institute (CLFMI) Product Manual
- Perform installation in accordance with ASTM F567.

1.5 QUALIFICATIONS

The Manufacturer shall be a company specializing in manufacturing products specified in this section with a minimum of three years documented experience. The Installer shall specialize in performing the work in this section with a minimum of three years documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

Fence fabric and accessories shall be delivered in packed cartons or firmly tied rolls. The Manufacturer's name must be clearly identified on each package. The fence fabric and accessories will be stored on site in secure and dry place.

PART 2 – MATERIALS

2.1 MATERIALS AND DESCRIPTION

The nominal fence height shall be six (6) feet and the spacing between line posts will not exceed ten (10) feet. Framing steel will be welded ASTM F1083 Schedule 40 galvanized steel pipe with coating conforming to ASTM F1043 Type A on the pipe exterior and interior. Fabric wire sheet will be ASTM A392 zinc-coated wire fabric and the foundation will be 3,000 psi concrete.

2.2 COMPONENTS

The following components will make up the chain link fences and gates:

- 2-3/8 inch diameter line posts
- 2-7/8 inch corner and terminal posts
- 3-1/2 inch diameter gate posts
- 1-5/8 inch diameter plain end, sleeve couple top and brace rails
- Gate frame with 1-5/8 inch diameter fittings and truss rod fabrication.

- 2-inch diamond-mesh interwoven wire, 9-gauge thick, top selvage twisted tight, bottom selvage knuckle end closed
- 7-gauge thick steel, single strand, galvanized tension wire
- 9 gauge aluminum alloy tie wire

2.3 ACCESSORIES

Caps shall be galvanized cast steel, pressed steel, or malleable iron. They will be sized to post diameter and set screw retainer. Fittings will be sleeves, bands, clips, rail ends, tension bars, fasteners, and fittings made of galvanized steel. Hardware for the gate will be a center gate stop and drop rod with two 180-degree gate hinges for each leaf.

2.4 GATES

The gate type, opening width, and direction of operation will be as indicated in the Design Plans and Drawings or by the CQAE in the field. The gate will be factory-assembled, designed for operation by one person, and fabricated to permit 180-degree swing. The gate will be constructed in accordance with ASTM F900 with welded corners. The use of corner fittings is not permitted. The components, fabric, and hardware will be galvanized in accordance with ASTM A123/A123M. Components and hardware will be constructed in accordance with ASTM A153/A153M and fabric will be constructed in accordance with ASTM A392. A 2.0 oz/ft² coating will be utilized for components, fabric, and hardware. All accessories will have the same finish as the framing.

PART 3 – EXECUTION

3.1 INSTALLATION

The following requirements will be met during installation of the fence and gate:

- Install framework, fabric, accessories, and gates in accordance with ASTM F567.
- Install posts with six (6) inches maximum clear opening from end posts to buildings, fences, and other structures.
- Excavate holes for posts to diameter and spacing indicated on Design Plans and Drawings without disturbing underlying materials.
- Center and align posts. Place concrete around posts and vibrate or tamp for consolidation. Verify vertical and top alignment of posts and make necessary corrections.
- Set intermediate, terminal, and gateposts plumb, in concrete footings with top of footing two (2) inches above finished grade. Slope top of concrete for water runoff.
- Line post footing depth below finished grade: ASTM F567.
- Corner, gate, and terminal post footing depth below finished grade: ASTM F567.
- Allow footings to cure a minimum of seven (7) days before installing fabric and other materials attached to posts.
- Brace each gate and corner post to adjacent line post with horizontal center brace rail and diagonal truss rods. Install brace rail one bay from end and gateposts.
- Install top rail through line post tops and splice with 6-inch long rail sleeves.
- Install center and bottom brace rail on corner gate leaves.
- Place fabric on outside of posts and rails.
- Stretch fabric on outside of posts and rails.

- Stretch fabric between terminal posts or at intervals of 1200 feet maximum, whichever is less.
- Position the bottom of fabric two (2) inches above finished grade.
- Fasten fabric to top rail, line posts, braces, and bottom tension wire with tie wire at maximum 15 inches on centers.
- Attach fabric to end, corner, and gateposts with tension bars and tension bar clips.
- Install bottom tension wire stretched taut between terminal posts.
- Support gates from gateposts. Do not attach hinged side of gate from building wall.
- Install gate with fabric overhang to match fence. Install three (3) hinges on each gate leaf.
- Provide concrete center drop to footing depth and drop rod retainers at center of double gate openings, if double gates are called for on the Design Plans and Drawings.

3.2 ERECTION TOLERANCES

- Maximum variation from plumb: 1/4 inch
- Maximum offset from indicated position: 1 inch

END OF SECTION